

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A power transfer apparatus for use in a four-wheel drive motor vehicle to transfer drive torque from a powertrain to first and second drivelines, comprising:

- a first rotary member connected to the first driveline;
- a second rotary member connected to the second driveline;
- a bi-directional overrunning mode clutch having a first ring driven by said first rotary member, a second ring concentrically aligned with said first ring and having an actuation slot with first and second edge surfaces, rollers disposed in aligned cam tracks formed in facing surfaces of said first and second rings, said second ring adapted to index circumferentially relative to said first ring to cause said rollers to engage said cam tracks and frictionally couple said second rotary member for rotation with said first ring, and a mode actuator ~~that is moveable~~ having a lug extending into said actuation slot and which can be circumferentially indexed relative to said second ring between a first mode position and a second mode position to establish corresponding AUTO and LOCK modes, said lug engages one of said first and second edge surfaces of said actuation slot when said mode actuator is located in its first mode position and said lug is released from engagement with both of said first and second edge surfaces of said actuation slot when said mode actuator is located in its second mode position, said mode clutch is operable in its AUTO mode to permit relative rotation between said first

and second rotary members in a first direction and prevent relative rotation therebetween in a second direction, and said mode clutch is operable in its LOCK mode to prevent relative rotation between said first and second rotary members in both directions; and

a shift mechanism for ~~moving~~ causing said mode actuator to circumferentially index between its first and second mode positions.

2. (original) The power transfer apparatus of Claim 1 wherein said first rotary member includes a first output shaft connecting the powertrain to the first driveline and a transfer assembly connecting said first ring of said mode clutch for rotation with said first output shaft, and wherein said second rotary member includes a second output shaft connected to the second driveline, said second ring disposed between said first ring and said second output shaft such that indexing of said second ring relative to said first ring causes said rollers to engage said cam tracks for coupling said second ring for rotation with said first ring and coupling said second output shaft for rotation with said second ring.

3. (original) The power transfer apparatus of Claim 2 wherein said first output shaft is a rear output shaft and said second output shaft is a front output shaft, and wherein said transfer assembly includes a first sprocket driven by said rear output shaft, a second sprocket surrounding said front output shaft, and a mechanism for connecting said first sprocket to said second sprocket, said first ring of said mode clutch being coupled to said second sprocket.

4. (currently amended) The power transfer apparatus of Claim 1 wherein said first rotary member includes a first output shaft connected the first driveline, and wherein said second rotary member includes a second output shaft connecting the powertrain to the second driveline and a transfer assembly connecting said first ring of said mode clutch for rotation with said first output shaft, said second ring of said mode clutch disposed between said first ring and said second output shaft such that indexing of said second ring relative to said first ring causes said rollers to engage said cam tracks for coupling said second ring to said second output shaft and said first ring to said second ring.

5. (cancelled)

6. (currently amended) The power transfer apparatus of Claim ~~[[5]]~~ 1 wherein said mode actuator has a rim on which a drag band is retained, said drag band having a pair of ends between which a cam member is retained, said cam member having a first segment operable to cause said drag band to exert a drag force on said rim of said mode actuator which causes circumferential indexing of said mode actuator to its first mode position in response to relative rotation between said first and second rings, said cam member further including a second segment operable to release said drag force from said mode actuator which causes said mode actuator to index to its second mode position.

7. (original) The power transfer apparatus of Claim 6 wherein said shift mechanism is operable for moving said cam member between a first position whereat its first segment engages said drag band and a second position whereat its second segment engages said drag band.

8. (original) The power transfer apparatus of Claim 7 wherein said shift mechanism includes a drive mechanism operable to move said cam member between its first and second positions in response to movement between first and second positions, and an electric motor for moving said drive mechanism between its first and second positions.

9. (original) The power transfer apparatus of Claim 1 further comprising:
a power-operated actuator for controlling movement of said shift mechanism;
a mode selector for permitting an operator to select one of an on-demand four-wheel drive mode and a part-time four-wheel drive mode; and
a controller receiving mode signals from said mode selector and controlling actuation of said power-operated actuator in response to said mode signals.

10. (original) The power transfer apparatus of Claim 9 wherein said power-operated actuator includes:

an electric motor receiving control signals from said controller; and

a drive mechanism operably interconnected to said mode actuator, said electric motor operable for causing movement of said mode actuator so as to shift said mode clutch between its AUTO and LOCK modes.

11. (currently amended) A transfer case comprising:

- an input shaft;
- a reduction unit driven by said input shaft and having an output member driven at a reduced speed relative to said input shaft;
- a first output shaft,
- a second output shaft;
- a range actuator moveable between a first position and a second position to establish corresponding drive connections between said first output shaft and each of said input shaft and said output member;
- a bi-directional overrunning mode clutch including a first ring driven by said first output shaft, a second ring and having an actuation slot with first and second edge surfaces, rollers disposed in aligned cam tracks formed in facing surfaces of said first and second rings, said second ring adapted to circumferentially index relative to said first ring to cause said rollers to ride up said cam tracks and cause said second ring to frictionally engage said second output shaft, and a mode actuator ~~that is moveable~~ having a lug extending into said actuation slot and which can be circumferentially indexed relative to said second ring between a first mode position and a second mode position to establish corresponding AUTO and LOCK modes, said lug engages one of said first and second edge surfaces of said actuation slot when said mode actuator is located in its first mode position and said lug is released from engagement with both of said first and second edge surfaces of said actuation slot when said mode actuator is located in its second mode position, said overrunning clutch is operable in its AUTO mode to permit relative rotation between said ~~rear~~ first and ~~front~~ second output shafts in

a first direction and prevent relative rotation therebetween in a second direction, and said overrunning clutch is operable in its LOCK mode to prevent relative rotation between said rear first and ~~front~~ second output shafts in both directions; and

a shift mechanism for controlling movement of said range actuator and said mode actuator.

12. (cancelled)

13. (currently amended) The transfer case of Claim ~~12~~ 11 wherein said mode actuator ~~ring~~ has a rim on which a drag band is retained, said drag band having a pair of ends between which a cam member is retained, said cam member having a first segment operable to cause said drag band to exert a drag force on said rim of said mode actuator ~~ring~~ which causes circumferential indexing of said mode actuator ~~ring~~ to its first mode position in response to relative rotation between said first and second rings, said cam member further including a second segment operable to release said drag force from said mode actuator ~~ring~~ which causes said mode actuator to index to its second mode position.

14. (original) The transfer case of Claim 13 wherein said shift mechanism is operable for moving said cam member between a first position whereat its first segment engages said drag band and a second position whereat its second segment engages said drag band.

15. (original) The transfer case of Claim 14 wherein said shift mechanism includes a drive member operable to move said cam member between its first and second positions and an electric motor for moving said drive member.

16. (original) The transfer case of Claim 11 further comprising:
a power-operated actuator for controlling movement of said shift mechanism;
a mode selector permitting an operator to select one of an on-demand four-wheel
drive mode and a part-time four-wheel drive mode; and
a controller receiving mode signals from said mode selector and controlling
actuation of said power-operated actuator in response to said mode signals.

17. (withdrawn)